

First Hit Fwd Refs
End of Result Set

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L15: Entry 1 of 1

File: USPT

Sep 18, 2001

US-PAT-NO: 6292806

DOCUMENT-IDENTIFIER: US 6292806 B1

TITLE: Computer aided maintenance and repair information system for equipment
subject to regulatory compliance

DATE-ISSUED: September 18, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sandifer; Michael A.	Millbrae	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Aircraft Technical Publishers	Brisbane	CA			02

APPL-NO: 09/ 441236 [PALM]

DATE FILED: November 16, 1999

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATIONS This is a continuation of U.S. patent application Ser. No. 09/111,041 filed on Jul. 7, 1998, now U.S. Pat. No. 5,987,474, which is a continuation of U.S. patent application Ser. No. 08/511,289 filed on Aug. 4, 1995, now U.S. Pat. No. 5,778,381, which is in turn a continuation of U.S. patent application Ser. No. 07/885,262 filed on May 18, 1992, now abandoned.

INT-CL: [07] G06 F 17/30

US-CL-ISSUED: 707/104; 707/3, 705/26

US-CL-CURRENT: 707/104.1; 705/26, 707/3

FIELD-OF-SEARCH: 707/104, 707/3, 395/50, 395/60, 395/11, 705/26

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected **Search ALL** **Clear**

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>4404639</u>	September 1983	McGuire et al.	364/551
<input type="checkbox"/>	<u>4796206</u>	January 1989	Boscove et al.	364/551.01
	<u>4943919</u>	July 1990	Aslin et al.	364/424.03

<input type="checkbox"/>				
<input type="checkbox"/>	<u>5146552</u>	September 1992	Cassorla et al.	395/145
<input type="checkbox"/>	<u>5195173</u>	March 1993	Gordon et al.	395/60
<input type="checkbox"/>	<u>5666481</u>	September 1997	Lewis	395/182.02
<input type="checkbox"/>	<u>5680328</u>	October 1997	Skorupski et al.	364/550
<input type="checkbox"/>	<u>5778381</u>	July 1998	Sandifer	707/104
<input type="checkbox"/>	<u>5950150</u>	September 1999	Lloyd et al.	702/183
<input type="checkbox"/>	<u>5987474</u>	November 1999	Sandifer	707/104
<input type="checkbox"/>	<u>6067549</u>	May 2000	Smalley et al.	707/104
<input type="checkbox"/>	<u>6170742</u>	January 2001	Yacoob	235/375

ART-UNIT: 271

PRIMARY-EXAMINER: Lintz; Paul R.

ATTY-AGENT-FIRM: Russo & Hale LLP Milks, III; William C.

ABSTRACT:

A computer based apparatus and method which provide access to complex technical information employed to maintain and repair complicated equipment, such as aircraft, to enable compliance with regulatory requirements.

20 Claims, 113 Drawing figures

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L15: Entry 1 of 1

File: USPT

Sep 18, 2001

DOCUMENT-IDENTIFIER: US 6292806 B1

TITLE: Computer aided maintenance and repair information system for equipment
subject to regulatory compliance

Application Filing Date (1):
19991116

Detailed Description Text (7):

The maintenance and repair information system 10 provides an enhanced graphics display. Aircraft technical information contains an abundance of illustrations and wiring diagrams in many different sizes and formats. The maintenance and repair information system 10 incorporates powerful imaging support to retrieve and display these illustrations and diagrams from originals up to J size drawings. No special graphics hardware components are required to achieve this high performance graphics capability. The imaging software instantly decompresses and scales images so that they can be displayed at the highest resolution accommodated by the monitor and graphics card. Then, users can easily pan across, up and down, and zoom in or out with simple mouse movements. High quality printing of both text and graphics is also supported.

Detailed Description Text (34):

A document is the portion of a publication which is the unit useful for InnerView display. For example, a FAR is organized by Part, Subpart, and Section within a Rule; the InnerView document level of a FAR will likely be Section. InnerView documents are the items presented in selection lists. In many cases the publication is also the document (i.e., AD, SI, Type Certificate (TC), or Supplemental Type Certificate (STC)). A document can also refer to whatever is currently being viewed in document display; and, therefore, a selection list or history list might also be referred to as the document currently being viewed.

Detailed Description Text (39):

When a selection list generated by the maintenance and repair information system 10 in accordance with the invention is being displayed, both icons can be predetermined logos to identify the library service provider. The left icon can indicate that this list was generated by and is the property of the library service provider. When the user clicks on the left icon, a product title, copyright notice, and revision information are preferably displayed.

Detailed Description Text (44):

When a history list is displayed, the top line of the title strip contains a product title (as before). The middle line of the title strip contains the name of the list which is "History of Documents Viewed." The bottom line of the title strip indicates either "Current History for this Session" or the name of the history file loaded.

Detailed Description Text (61):

It is noted that the maintenance and repair information system 10 in accordance with the invention associates page identifications (the physical page markers) with

the InnerView page tag. This provides for the insertion of page breaks when printing. Nonetheless, equating page identifications with a printer page break does not ensure that an original page will fill up a single page when it is printed.

Detailed Description Text (62):

There are several document display tools that are only used for controlling the display of a document in document display. These document display tools include: selection list (next/previous); history (next/previous); word search hit (next/previous); zoom (in/out); and view (text, graphics). These document display tools are presented through icons in the Document Display Toolbox. This toolbox is always displayed as part of the document display, even if none of its features are active.

Detailed Description Text (66):

The item pointed to by a search or last selected on a selection list is highlighted. This indicates where in the list the user is oriented.

Detailed Description Text (71):

The user also has the ability to Zoom in on a graphic in predetermined incremental steps (defined by preferences in InnerView). This is accomplished by clicking on the two-sided zoom in/out icon located in the Document Display Toolbox. Pressing the + or - keys also supports zoom in and zoom out in predetermined increments.

Detailed Description Text (76):

In addition to using the incremental zoom feature available from the toolbox, the user can zoom in and out on any graphic in the following manner. Initially, the user moves the mouse pointer to a corner of the area he or she wants to zoom in on. Next, he or she presses and holds the left mouse button. Then, the user drags the mouse pointer to the opposite corner of the area to be zoomed. Finally, he or she releases the mouse button.

Detailed Description Text (77):

As the user "clicks and drags," a border defines the area to be zoomed. Upon release of the mouse, the defined area enlarges to fill the document display area. Since the user is unlikely to define an area that matches the aspect ratio of the screen, the maintenance and repair information system 10 in accordance with the invention relies on InnerView to display all of the image requested by the user.

Detailed Description Text (81):

Data input fields allow the user to input text in any form limited only by a field length. Radio buttons allow the user to select one item from a variety of choices, but never initiate an action. Check boxes allow multiple (or single) items to be selected from a finite list of choices, but do not initiate an action when clicked. Control buttons always initiate an action when clicked. Double clicking on a radio button or check box will select or toggle the desired item and initiate action as if the user had also clicked on the OK button.

Detailed Description Text (109):

A CD-ROM check is performed. The system files are checked to see what kind of CD-ROM setup is in place. The CD-ROM drives are checked and the CD-ROM disc volume label(s) are checked against the system authorized product file. An error is generated if the CD-ROM volume label does not match the authorized list. Another error is generated if the revision of a product falls outside the subscription date. Otherwise, the CD-ROM check provides a list of available products (and revisions), as well as sets the required drive.backslash.path specifications required to access these products.

Detailed Description Text (115):

Another example is if the supervisor wanted to "record" the displaying of all new publisher bookmarks for a product update. The novice user could simply "playback"

the bookmarks for review.

Detailed Description Text (137):
Display product library list

Detailed Description Text (152):

This is related to the use of the interface. The product copyright acknowledgement that appears after selecting a product is related to the information presented in each product.

Detailed Description Text (174):

0.3.0 Product Selection List/Revision Date Acceptance

Detailed Description Text (176):

The product selection list allows selection of one or more products if more than one product is available with their current subscription. If only one product is available, this list must still be shown since it also forces the user to acknowledge the revision date. To limit legal liability for the timeliness of information, users are required to acknowledge the Product Name and its revision date.

Detailed Description Text (177):

Each product has an update period assigned. If the product revision date plus the product update period compared to the system date indicates that the revision is overdue, then the warning message will be displayed.

Detailed Description Text (183):

There is an installed product list from which the user can select which product he or she wants to work with. At this time, there is no plan to electronically commingle multiple products.

Detailed Description Text (188):

This screen forces the user to acknowledge that the information presented in the product he or she has selected (the data, not the interface) is also copyrighted.

Detailed Description Text (193):

The opening animation introduces the particular product selected from the product selection list. It is noted that the animation is different dependent upon which product is selected. For example, a Federal Regulatory product can use a spinning globe animation. Animation can be implemented using Autodesk Animator Pro to be appropriate for VGA display.

Detailed Description Text (195):

The maintenance and repair information system 10 displays the animation as an AA Flick (Autodesk Animator Flick) run through AA Play. Based on the product chosen from the product selection list, the maintenance and repair information system 10 calls whichever animation batch file runs the appropriate animation.

Detailed Description Text (203):

The Navigator Screen is first displayed after program initialization. There is a row of icons arrayed across the bottom of the screen. The features offered by these icons are known as the Navigator Control Functions. These functions are used throughout the maintenance and repair information system 10. It is noted that the VIEW text/graphics/both function, the DOC up/down functions, and the ZOOM in/out function all appear as part of the document display toolbox only available when the user is in document display of an InnerView document.

Detailed Description Text (216):

The Navigator Screen is the first screen displayed after the user acknowledges the Product Revision Date. The Navigator Return function redisplay and returns the

user to this screen from anywhere within the program. When at the Navigator Screen, the function allows the user to select a new product.

Detailed Description Text (290):

When displayed, the Aircraft Inspector's box is aware of the user's location in the current document. Using that location as the "From," all items in the index with that identification are displayed in the Aircraft Inspector dialog box.

Detailed Description Text (291):

The Aircraft Inspector dialog box is a fixed size. If there are more items in that box than can be displayed, a scroll bar allows the user to scroll through every item. Clicking on an item in the dialog box takes the user to that document location and at the specified location (submitting the word search find expression if appropriate). For the purposes of selection and history lists, this is a flight plan link just like the direct flight option.

Detailed Description Text (373):

The federal regulatory product offers two access methods: Selection List and Word Search. The ATA Sort option is grayed out for the regulatory product, because regulatory publications do not have an ATA established order. All access options are available for manufacturer specific products, such as those available from Gulfstream.

Detailed Description Text (452):

This section of the Electronic Logbook allows the user to track compliance with Service Information (SI). Only the SI referenced by ADs are presented in the regulatory product, not all SI.

Detailed Description Text (455):

When the user selects SI compliance, the top of the Electronic Logbook editing screen shows the compliance records already created for the current profile. For the Federal Regulatory library, an information box automatically presents an "information reminder" noting that only SI referenced by ADs are included with this regulatory product, not all SI. The information box is removed by hitting the OK button (acknowledging the limitation of this regulatory library).

Detailed Description Text (692):

With regard to selection lists, clicking OK from the Browse Options dialog box launches into the selection list in document display. Once launched into a selection list, an item is preferably highlighted. This item can be the particular item pointed to by the Browse options, or the first item in the group pointed to by the Browse options. Headings are preferably not highlighted.

Detailed Description Text (693):

If the user leaves all of the Browse options blank but still initiates Browse, the user would go to the first item on the selection list in the Browse sequence that corresponds to the primary index.

Detailed Description Text (738):

It is the act of specifying either a publication type or a model number that indicates to the maintenance and repair information system 10 which Browse sequence is preferred by the user. Specifying a document number merely points to a single item on either selection list. When both a publication type and a model are provided by the user, the maintenance and repair information system 10 assumes that the user prefers the selection list ordered according to the manufacturer publication type index (CD-ROM order).

Detailed Description Text (748):

With regard to the monthly issue selection list, the selection list ordered according to the monthly issue index lists all Alerts in descending order by

monthly issuance (most recent first). The month issued and the actual Alert issuance number appear as headings in the selection lists. Each individual Alert is listed as a selection list item following the headings. It is noted that unlike ADs, the Alerts issuance number is actually the number of the entire issuance, not the number for an individual Alert that applies to a particular aircraft or component. Therefore, document identifications for each Alert have to be assigned. Those document identifications preferably include the two-letter document type code, the Alerts issuance number, and, finally, a unique number indicating where in the original Alerts issuance an Alert appeared (where and on what page). Since this Alert number is not used outside the library service provider, it preferably does not appear in the selection list.

Detailed Description Text (763):

Each TC is an item on the selection list. Clicking on a TC number takes the user to the top of the first page of the TC. If the user is actually interested in the part of that TC which applies to one model (the model block), the user can click on the model number in the model listing at the beginning of every TC. These model numbers are hyperlinked to the beginning of the related model block.

Detailed Description Text (785):

The AC number Browse option allows the user to enter the actual AC number to point to that exact item on the selection list. Because an AC number identifies a particular item on the sole selection list, it implies a subject and FAR part.

Detailed Description Text (847):

Although the focus is on the Gulfstream SI, the conventions established apply to the presentation of SI within any manufacturer specific product.

Detailed Description Text (872):

Once the search criteria have been established by the user, the Search function checks every document (at the InnerView document level) of the specified document type(s) for the search criteria. For example, with FARs the publication is a FAR, but the InnerView document level is FAR section. Therefore, the items on a selection list generated by a FAR search would be FAR sections that meet the search criteria. Other fields on a selection list of FAR sections clearly indicate the FAR part and subpart, but the selection list item is a FAR section.

Detailed Description Text (873):

Because an item on a selection list corresponds to an InnerView document, clicking on a selection list item takes the user to an InnerView document.

Detailed Description Text (877):

Nonetheless, even if a single document is the result of a search that did not specify a document identification, the user is shown the selection list with one item. This allows the user to see the results of a search and decide if he or she wants to view the resulting document, rather than blindly forcing him or her into an InnerView document he or she did not specify.

Detailed Description Text (878):

With regard to proposed FARs, ADs, and Hazardous Materials in the Search Mode, when using the Search function to search a document type with an associated set of "proposed" documents (i.e., FARs, ADs, and Hazardous Materials), the proposed document is automatically included in the search. Consequently, they appear on the selection list generated by search. On the selection list, these items are marked proposed and added to the bottom of the selection list. Proposed items have the same fields as other items in the selection list.

Detailed Description Text (952):

Although the focus is on the Gulfstream SI, the conventions established apply to the presentation of SI within any manufacturer specific product.

Detailed Description Text (976):

It is noted that the result of this search is a revision selection list of revised documents. (In this one instance, multiple document types can be displayed on the same selection list because they are actually coming from the revision index.) Clicking on an item in the selection list takes the user to that document in document display.

Detailed Description Text (989):

This is a complete listing of library service provider products and services including descriptions and pricing information. As an index, it provides the user with the ability to search the complete list for products or services based on aircraft specific criteria or a word search.

Detailed Description Text (992):

The result is a selection list of the products that meet the search criteria. Like STCs, the selection list is the data. Specifying no search criteria allows the user to Browse the entire list.

Detailed Description Text (1000):

It is noted that the result of this search is a revision selection list of CD-ROM Bulletins. Clicking on an item in the selection list takes the user to that document.

Detailed Description Text (1008):

This is a list of all manufacturers' product support personnel and their current names, addresses, and telephone numbers (work and home as available).

Detailed Description Text (1020):

Note that FAA Forms Printer conforms to all the usual rules associated with selection list and InnerView documents viewed and printed in document display. The fact that the items presented in the selection list are graphics is no different than presenting graphics in the selection list for the IPC in manufacturer specific products.

Current US Cross Reference Classification (1):

705/26